

What is claimed is:

1. A deflectable catheter assembly comprising:
 - a catheter body extending from a deflectable distal end to a proximal end and having an intermediate portion therebetween, wherein the catheter body includes an actuator lumen;
 - a housing coupled to the proximal end of the catheter body;
 - a flexible element extending from the housing through the actuator lumen, to the deflectable distal end, wherein the deflectable distal end is controllable by the flexible element; and
 - a first tubular support coupled to the flexible element therein and coupled to an actuator mechanism disposed within the housing.
2. The deflectable catheter assembly of claim 1, further comprising:
 - a second tubular support telescopically coupled with the first tubular support.
3. The deflectable catheter assembly of claim 2, wherein the second tubular support inner surface is dimensioned and configured to snugly envelop and slidably couple with the flexible element.
4. The deflectable catheter assembly of claim 3, wherein the first tubular support outer surface has a complementary perimeter dimensioned and configured to slidably couple with the surface defining the actuator lumen.
5. The deflectable catheter assembly of claim 4, wherein the surface defining the actuator lumen has a circular geometry.

6. The deflectable catheter assembly of claim 4, wherein a first tubular support intermediate surface and a second tubular support intermediate surface are dimensioned and configured to slidably couple the first tubular support with the second tubular support.
7. The deflectable catheter assembly of claim 6, wherein the first tubular support intermediate surface, the first tubular support outer surface, and the first tubular support inner surface define at least one first tubular support finger.
8. The deflectable catheter assembly of claim 6, wherein the second tubular support intermediate surface, the second tubular support outer surface, and the second tubular support inner surface define at least one second tubular support finger.
9. The deflectable catheter assembly of claim 2, wherein the second tubular support inner surface is dimensioned and configured to snugly envelop and slidably couple with the first tubular support outer surface.
10. The deflectable catheter assembly of claim 1, wherein the first tubular support outer surface is dimensioned and configured to slidably couple with a surface defining the actuator lumen.
11. A deflectable catheter assembly comprising:
 - a catheter body extending from a bi-directional deflectable distal end to a proximal end and having an intermediate portion therebetween, wherein the catheter body is bi-directionally deflectable and includes an actuator lumen;
 - a housing attached to the proximal end of the catheter body;

a flexible element extending from the housing through the actuator lumen, to the bi-directional deflectable distal end, wherein the bi-directional deflectable distal end is controllable by the flexible element;

a first tubular support coupled to the flexible element and coupled to an actuator mechanism disposed within the housing; and

a second tubular support slidably coupled with the first tubular support.

12. The deflectable catheter assembly of claim 11, wherein the first tubular support and second tubular support have a substantially similar outer perimeter.

13. The deflectable catheter assembly of claim 12, wherein a surface defining the actuator lumen is dimensioned and configured to snugly couple with the first tubular support and second tubular support.

14. The deflectable catheter assembly of claim 13, wherein the first tubular support is slidably coupled with the surface defining the actuator lumen.

15. The deflectable catheter assembly of claim 13, wherein the second tubular support is coupled with the surface defining the actuator lumen.

16. The deflectable catheter assembly of claim 11, wherein an intermediate surface of the first tubular support and an intermediate surface of the second tubular support are dimensioned and configured to slidably couple the first tubular support with the second tubular support.

17. The deflectable catheter assembly of claim 16, wherein the first tubular support intermediate surface, the first tubular support outer surface, and the first tubular support inner surface define at least one first tubular support finger.

18. The deflectable catheter assembly of claim 16, wherein the second tubular support intermediate surface, the second tubular support outer surface, and the second tubular support inner surface define at least one second tubular support finger.

19. A deflectable catheter assembly comprising:

- a catheter body extending from a deflectable distal end to a proximal end and having an intermediate portion therebetween, wherein the catheter body includes an actuator lumen;
- a housing attached to the proximal end of the catheter body;
- a flexible element extending from the housing through the actuator lumen, to the deflectable distal end, wherein the deflectable distal end is controllable by the flexible element; and
- means for constraining lateral movement of the flexible element within the actuator lumen.

20. The deflectable catheter assembly of claim 19, wherein the means for constraining lateral movement of the flexible element includes:

- a first tubular support coupled to the flexible element and coupled to an actuator mechanism disposed within the housing; and
- a second tubular support coupled to a surface defining the actuator lumen and slidably coupled to the first tubular support.

21. The deflectable catheter assembly of claim 20, wherein the first tubular support outer surface has an outer perimeter dimensioned and configured to snugly couple with a surface defining the actuator lumen.

22. The deflectable catheter assembly of claim 20, wherein the first tubular support is slidably coupled with the surface defining the actuator lumen, and the second tubular support is slidably coupled with the first tubular support and slidably coupled with the flexible element.
23. A method comprising:
 - manipulating a deflectable catheter assembly into a first orientation, the catheter assembly including a catheter body and housing coupled to the catheter body proximal end, an actuator lumen extending therein, a flexible element extending from an actuator member coupled with the housing through the actuator lumen to a deflectable distal end, a first tubular support coupled to the flexible element and coupled to the actuator member, and a second tubular support coupled to the flexible element;
 - constraining lateral movement of the flexible element including bracing the flexible element with the first tubular support and second tubular support; and
 - further manipulating the actuator member to thereby actuate the flexible element and deflect the deflectable distal end into a disparate orientation.
24. The method of claim 23, further comprising:
 - telescopically advancing the first tubular support with the actuator member with respect to the second tubular support.
25. The method of claim 23, wherein further manipulating the actuator member to deflect the deflectable distal end into the disparate orientation includes constraining lateral movement of the flexible element within the actuator lumen with the first tubular support and second tubular support.

26. A method comprising:

manipulating a deflectable catheter assembly into a first orientation, the catheter assembly including a catheter body and housing coupled to the catheter body proximal end, an actuator lumen extending therein, a flexible element extending from an actuator member coupled with the housing through the actuator lumen to a deflectable distal end, a first tubular support coupled to the flexible element and coupled to the actuator member, and a second tubular support slidably coupled to the flexible element;

longitudinally advancing the flexible element and first tubular support along the actuator lumen longitudinal axis, while the second tubular support is stationary with respect to the housing, and the first tubular support and second tubular support remain aligned with the actuator lumen longitudinal axis; and

further manipulating the actuator member to thereby advance the flexible element and deflect the deflectable distal end into a disparate orientation.

27. The method of claim 26, further comprising:

telescopically advancing the first tubular support with the actuator member with respect to the second tubular support.

28 The method of claim 26, further comprising:

constraining lateral movement of the flexible element including bracing the flexible element with the first tubular support and second tubular support.

29. The method of claim 26, wherein further manipulating the actuator member to deflect the deflectable distal end into the disparate orientation includes constraining lateral movement of the flexible element within the actuator lumen with the first tubular support and second tubular support.

30. The method of claim 26, wherein further manipulating the actuator member to deflect the deflectable distal end into the disparate orientation includes longitudinally advancing the flexible element and first tubular support along the actuator lumen longitudinal axis, while the second tubular support is stationary with respect to the housing, and the first tubular support and second tubular support remain aligned with the actuator lumen longitudinal axis.